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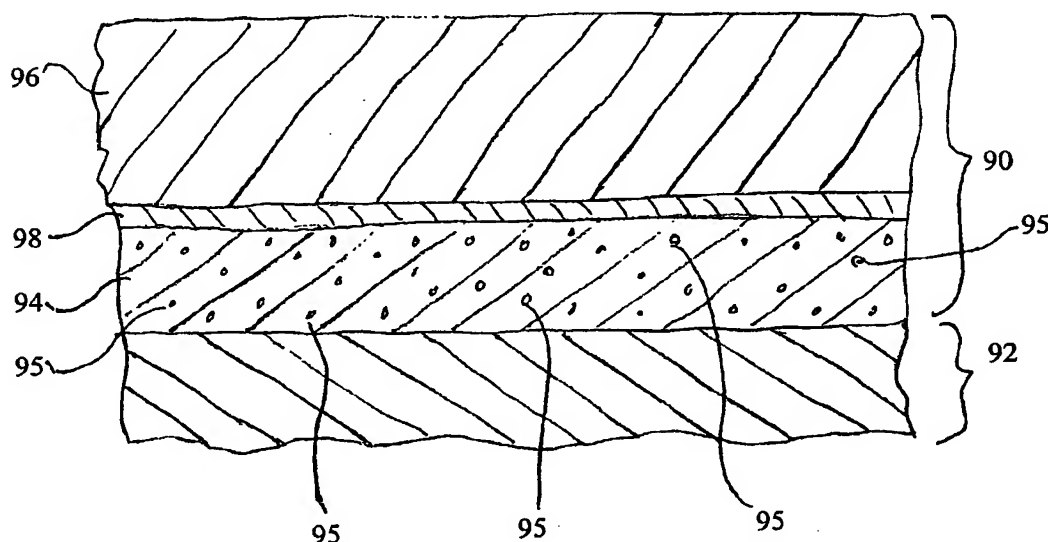
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(54) Title: METHOD AND APPARATUS FOR DISPERSION STRENGTHENED BOND COATS FOR THERMAL BARRIER COATINGS



(57) **Abstract:** A directed vapor deposition (DVD) method and system for applying at least one bond coating on at least one substrate for thermal barrier coating systems. The method and system provides for alloy strengthening in high temperature metallic alloys that can be melt or solid state processed to materials that one applies by vapor deposition. The creep strengthened coating contains nanoscopic particles of oxides, nitrides, borides, carbides, and other materials which are formed by reactive codeposition. An approach for reactive codeposition is plasma assisted directed vapor deposition. Accordingly, the resultant structure may be utilized for, but not limited thereto, high temperature coatings, e.g. for protecting rocket or power turbines, or diesel engine components. The resultant structure is has a greatly extended lifetime attributed in part to the elimination of coating spallation by the "rumpling" mechanism.